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# AREA AND OWNERSHIP OF FOREST LAND IN HUMBOLDT COUNTY, CALIFORNIA

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CALIFORNIA FOREST AND RANGE EXPERIMENT STATION

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The California Forest and Range Experiment Station
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Agriculture--Berkeley

# FOREWORD

The Forest Survey, authorized by the McSweeney-McNary Research Act of 1928, is a nationwide project of the Forest Service designed to provide a comprehensive survey of the forest resource of the United States. This Survey has the following primary objectives:

(1) To inventory all forest lands and the standing timber on those lands.

(2) To measure the current and probable future rate of timber growth and the productive capacity of the forest lands.

(3) To determine the rate of timber depletion through cutting, insects, disease, and other causes.

(4) To determine the present and expected requirements for lumber and other forest products.

(5) To provide, through correlation of these facts with one another and with other economic knowledge, a basis for formulating local, State, and national forest policies and management plans.

In California this work is the responsibility of the Division of Forest Economics of the California Forest and Range Experiment Station in Berkeley.

This report presents the statistics of forest area and forest land ownership in Humboldt County, California as of 1948. Besides the facts about the extent, location, and condition of all forest lands, this release gives quantitative data as to the type of ownership, size of ownership, and number and kinds of owners. Estimates of timber volumes are omitted because sampling was not designed to provide this information on areas as small as counties.

Other county statistical reports presenting data on area and ownership of forest land have been published for Siskiyou, Trinity, Mendocino, Lake, and Sonoma counties. Also, a major statistical report has been published for the Coast Range Pine subregion which presents data on land areas, timber volumes, ownership, growth, and drain. A similar report is planned for the Redwood--Douglas-fir subregion as data become available.

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# GENERALIZED TYPES AND AGE CLASSES OF TIMBER STANDS

## HUMBOLDT COUNTY, CALIFORNIA

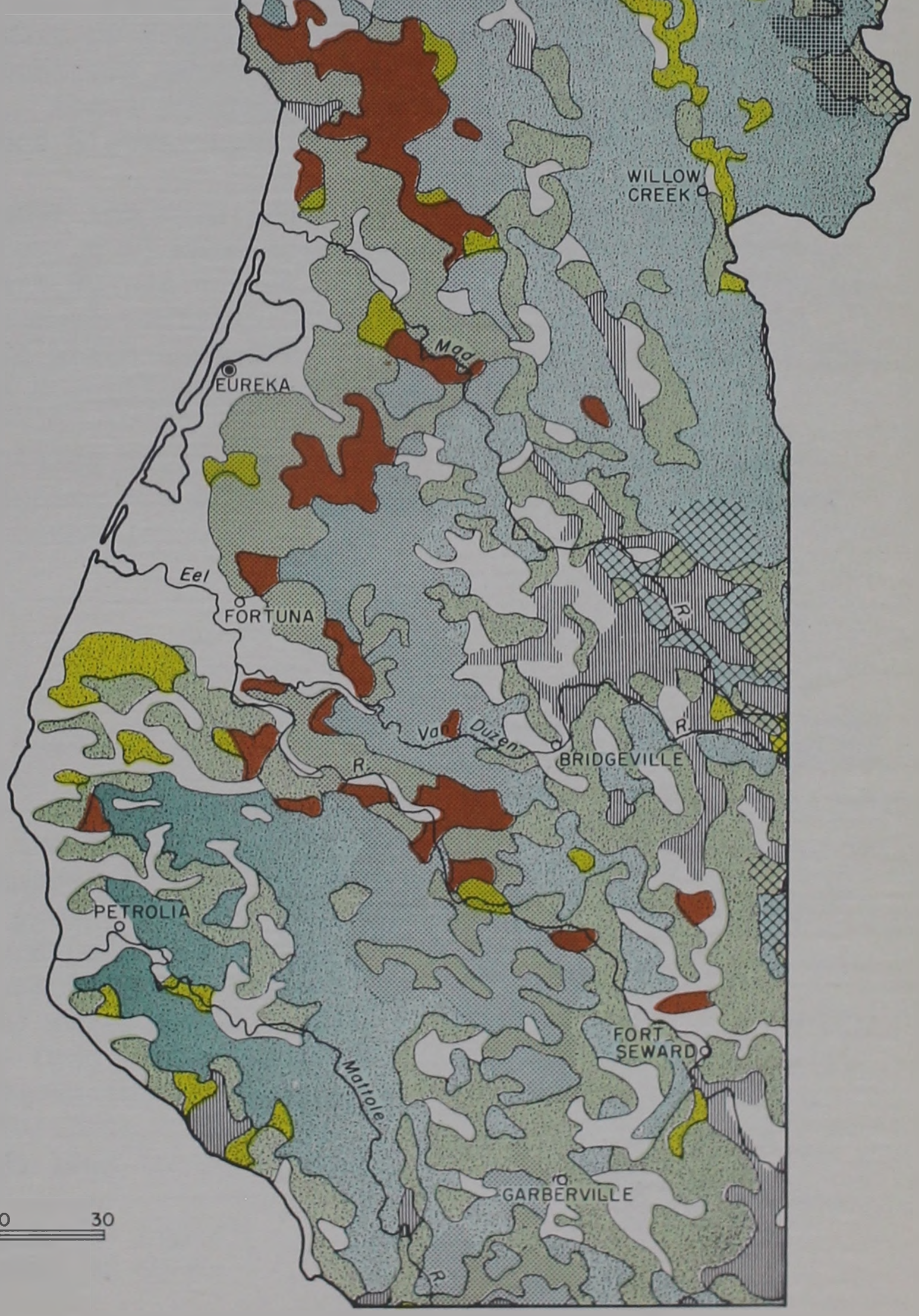
TYPES

- Redwood
- Douglas-fir
- Pine–Douglas-fir–Fir
- Fir

AGE CLASSES

- Old growth
- Young growth - old growth and large young growth
- Small young growth
- Nonstocked

- Noncommercial forests
- Nonforest




10 0 10 20 30

SCALE OF MILES

# FACTS ABOUT HUMBOLDT COUNTY

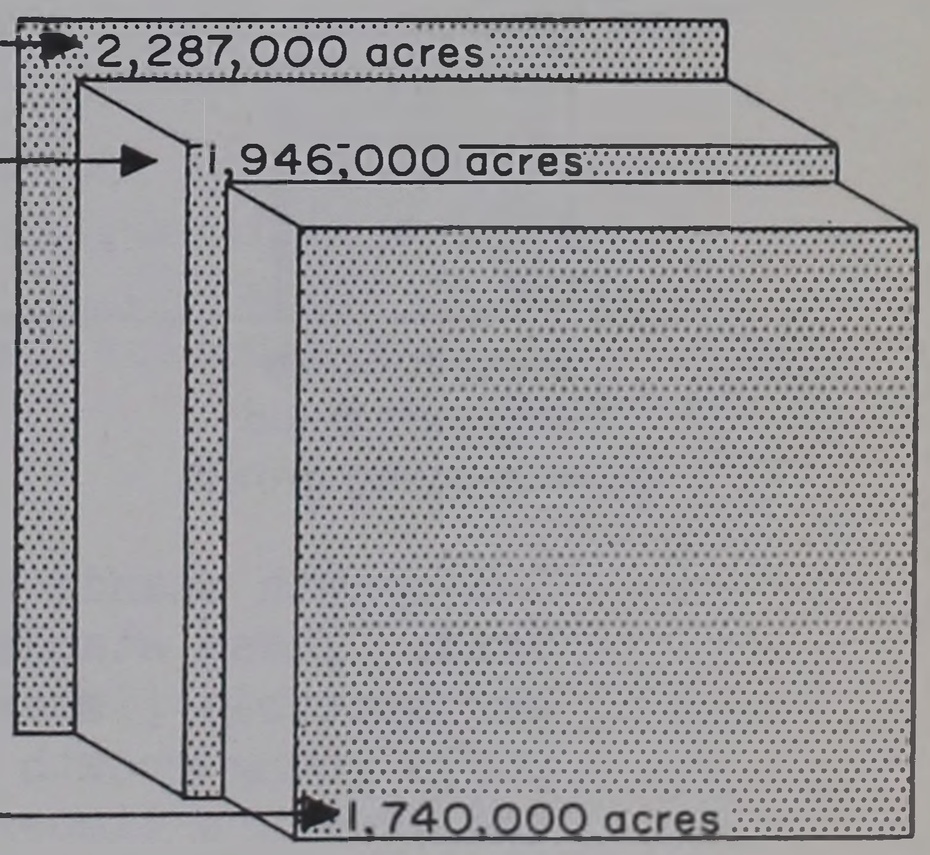
Humboldt County, in the northwestern corner of California, has a total land area of 2,287 thousand acres. This is generally mountainous, with elevations ranging from sea level to 5,334 feet, though some level lands occur around Humboldt Bay and along the main rivers. The major rivers in the county are the Klamath, Eel, Trinity, Mad, and Mattole. All of these provide excellent recreation opportunities as well as water values. Humboldt Bay is the chief harbor between San Francisco and Portland.

Forests are the primary natural resource of Humboldt County. More than three-fourths of the total land area is classified as commercial forest land. This area supports stands composed principally of redwood and Douglas-fir. Only one county in California, Siskiyou, has more commercial forest land. Most of Humboldt County's commercial forest is privately owned. The publicly owned portion is primarily in the Six Rivers National Forest. About 30 thousand acres of old-growth redwood forests along the Redwood Highway have been reserved as State Parks.

Manufacture of lumber and wood products is the major industry of the county. The 1947 Census of Manufactures showed that this industry alone accounted for about 90 percent of both the county's total manufacturing employment and annual payroll. Particularly important is the production of lumber, in which Humboldt leads all other counties in the State. Plywood is also a leading wood product.

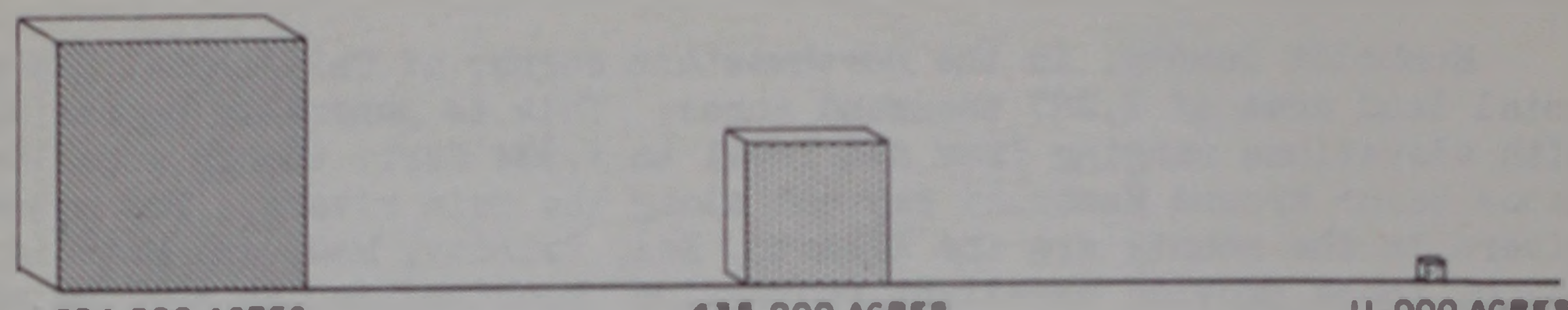
Agriculture (especially dairy products, beef, and wool), recreation, and commercial fishing are other important sources of income and employment in Humboldt County.

THE TOTAL LAND AREA OF HUMBOLDT COUNTY IS
85 percent of this is
FOREST LAND
About 11 percent of the forest land is classified as noncommercial. Nine percent is not suitable for growing timber crops. It is occupied by hardwoods and woodland-grass types, which are valuable for production of forage and water. The other 2 percent is withdrawn from timber utilization to provide recreation areas and to protect critical watersheds. Thus, 89 percent of the forest land is
COMMERCIAL FOREST LAND
This land is growing or is capable of growing usable crops of wood.



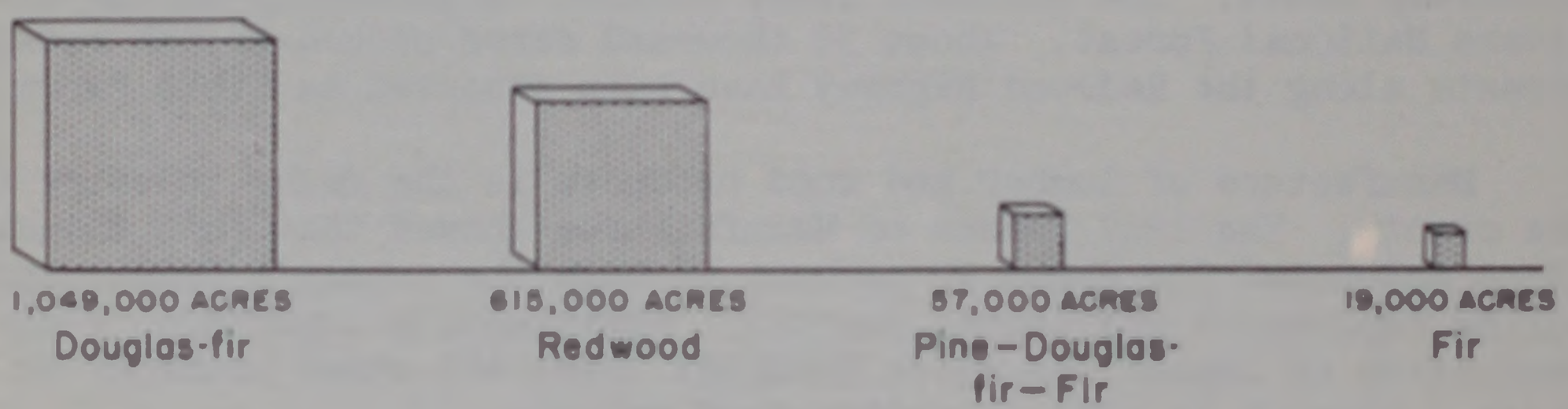
## COMMERCIAL FOREST LAND

OWNERSHIP



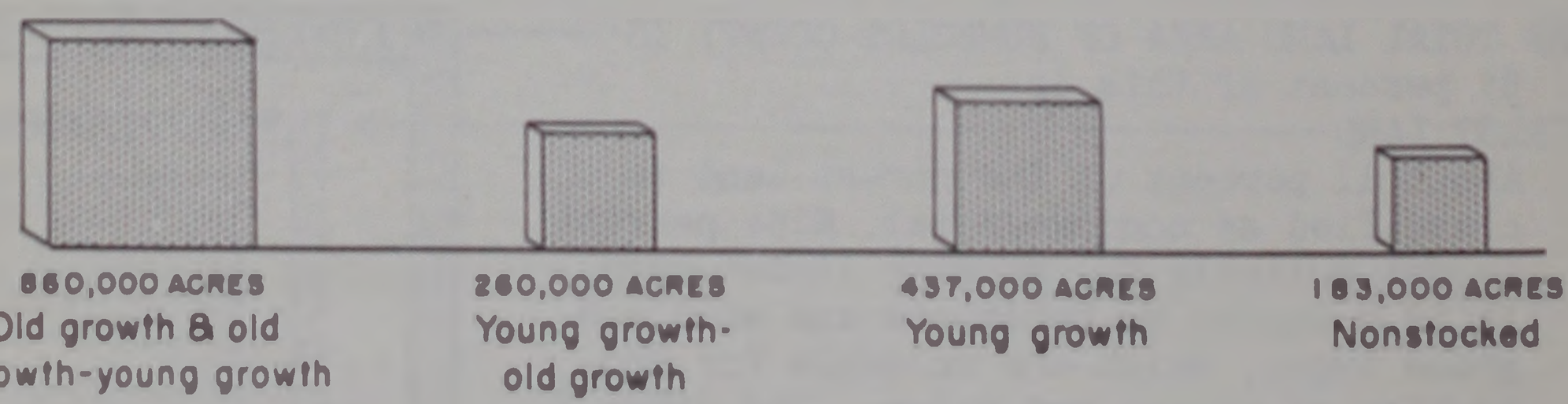

About 74 percent of the commercial forest land is privately owned. The remainder is mostly federally owned and is principally national forest and Indian land. (table 1)

TYPES




The Douglas-fir type occupies 60 percent of the commercial forest land. Stands classified as redwood type occur on 35 percent of the area. The remaining 5 percent of commercial forest land is occupied primarily by mixed stands of pine, Douglas-fir, and fir. (table 5)

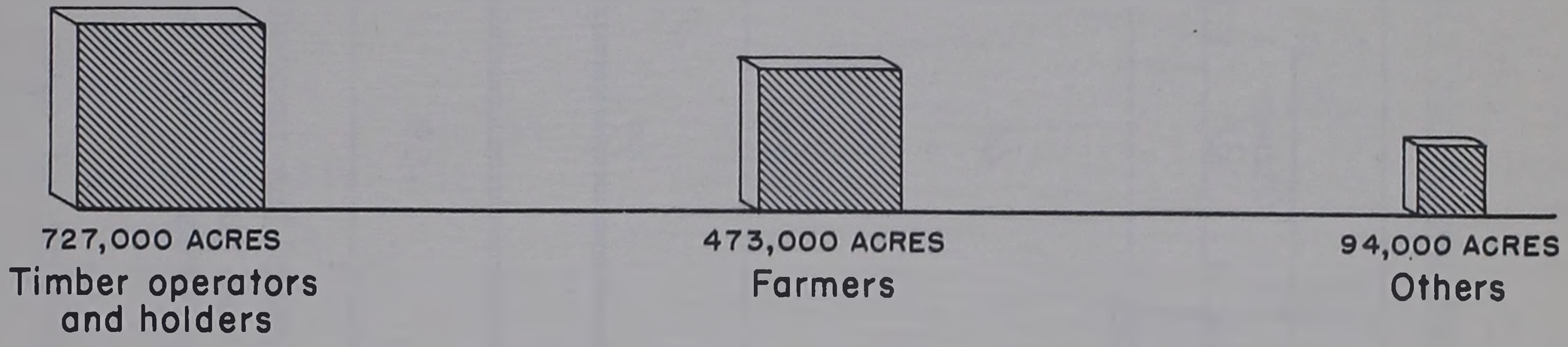
AGE CLASSES




Old-growth stands occupy 49 percent of the commercial forest land. These stands contain the major part of the county's merchantable timber. Twenty-five percent of the area supports young-growth stands. Areas with mixed stands of mature and immature timber in which the immature timber is predominant and areas nonstocked with commercial conifers compose the remainder. (table 7)

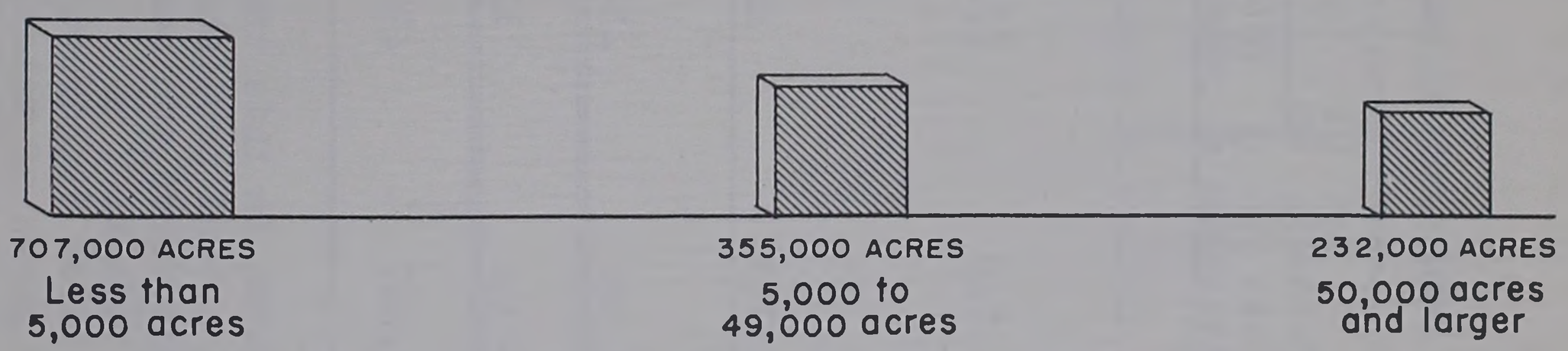
# PRIVATELY OWNED
# COMMERCIAL FOREST LAND

TYPE OF OWNERSHIP




Corporations or individuals engaged in commercial logging and milling of timber or planning future operations have 56 percent of the privately owned commercial forest land. Farmers own 37 percent; and the remaining 7 percent is owned by a variety of owner types. (table 3)

SIZE OF OWNERSHIP




55 percent of the privately owned commercial forest land is in holdings of less than 5,000 acres. Medium-sized holdings account for 27 percent; and holdings of 50,000 acres or more, the remaining 18 percent. Redwood timber holdings are generally in the larger size classes. (table 6)

Table 1.- Total land area by major classes of land and by ownership class, 1948

| Class of land | Total all ownerships | Federally owned[1] | | | | State, county, and municipal | Private |
|---|---|---|---|---|---|---|---|
| | | Total federal | National forest | Indian | Other[2] | | |
| | Thousand acres | | | | | | |
| Forest land | | | | | | | |
| Commercial | 1,740 | 435 | 292 | 99 | 44 | 11 | 1,294 |
| Noncommercial | | | | | | | |
| Reserved from commercial timber use | 27 | - | - | - | - | 27 | - |
| Unproductive for timber use[3] | 179 | 44 | 29 | 2 | 13 | 1 | 134 |
| Total forest land | 1,946 | 479 | 321 | 101 | 57 | 39 | 1,428 |
| Nonforest land | [4]341 | 12 | 3 | 7 | 2 | 3 | 326 |
| All land | [5]2,287 | 491 | 324 | 108 | 59 | 42 | 1,754 |

1/ Because all figures in this tabulation are derived by sampling procedure, total acreage figures vary somewhat from actual published land acreages by various public agencies listed here. For details on sampling procedures and sampling errors for various area sizes see appendix.

2/ Chiefly public domain.

3/ Includes 1,000 acres withdrawn for special uses.

4/ Includes 12,000 acres of water according to survey standards of area classification but defined by the Bureau of Census as land.

5/ From "Areas of the United States 1940," U. S. Bureau of the Census.

Table 2.- Total land area by vegetation and nonvegetation types, 1948

| Type | Area<br>Thousand<br>acres |
|---|---|
| Commercial forest land | |
| Redwood | 615 |
| Douglas-fir | 1,049 |
| Fir | 19 |
| Pine--Douglas-fir--Fir | 57 |
| Total | 1,740 |
| Noncommercial forest land | |
| Reserved from commercial timber use | |
| Redwood | 27 |
| Unproductive for timber use[1/] | |
| Coniferous woodland | 19 |
| Hardwoods (woodland) | 89 |
| Woodland-grass | 46 |
| Chaparral | 25 |
| Total | 206 |
| Total forest land | 1,946 |
| Nonforest land | |
| Coastal sagebrush | 2 |
| Grass | 218 |
| Barren | 17 |
| Marsh | 2 |
| Cultivated, urban and industrial | 90 |
| Water[2/] | 12 |
| Total nonforest land | 341 |
| All land | 2,287 |

1/ Includes 1,000 acres withdrawn for special use.
2/ Water according to survey standards of area classification but defined by the Bureau of Census as land.

Table 3.- Number of ownerships and area of privately owned land by type of ownership, 1948

| Type of ownership | Ownerships | | Total land area | | Commercial forest land | Non-commercial forest land | Non-forest land |
|---|---|---|---|---|---|---|---|
| | No. | Pct. | Thousand acres | Pct. | --- Thousand acres ---- | | |
| Timber operating company | 68 | 1.8 | 380 | 21.7 | 361 | 6 | 13 |
| Timber holding company | 39 | 1.0 | 68 | 3.9 | 65 | 1 | 2 |
| Timber operating individual | 65 | 1.7 | 29 | 1.6 | 29 | (1/) | (1/) |
| Timber holding individual | 830 | 22.1 | 289 | 16.5 | 272 | 8 | 9 |
| Range livestock farming company | 9 | 0.2 | 42 | 2.4 | 25 | 5 | 12 |
| Range livestock farming individual | 385 | 10.3 | 651 | 37.1 | 365 | 98 | 188 |
| Other farmers | 1,245 | 33.1 | 146 | 8.3 | 83 | 7 | 56 |
| Recreational property owners | 432 | 11.5 | 37 | 2.1 | 29 | 4 | 4 |
| Other classified 2/ owners | 688 | 18.3 | 74 | 4.2 | 60 | 4 | 10 |
| Unclassified 3/ | - | - | 38 | 2.2 | 5 | 1 | 32 |
| All types | 3,761 | 100.0 | 1,754 | 100.0 | 1,294 | 134 | 326 |

1/ Less than 500 acres.

2/ All other land owners whose classification is known but does not logically fit the classes listed above. Examples are owners of land held for residential purposes only, mining claims, and reservoir sites.

3/ Small urban, suburban, and industrial ownerships that are too small to map and classify properly, and ownerships that for other reasons cannot be classified and placed in appropriate categories.

Table 4.- Number of ownerships and area of privately owned land by size of ownership, 1948

| Size of ownership | Ownerships | | Total land area | | Commercial forest land | Non-commercial forest land | Non-forest land |
|---|---|---|---|---|---|---|---|
| Acres | No. | Pct. | Thousand acres | Pct. | ----- Thousand acres ----- | | |
| 1- 179 | 2,861 | 76.1 | 232 | 13.5 | 169 | 13 | 50 |
| 180- 379 | 411 | 10.9 | 123 | 7.2 | 92 | 8 | 23 |
| 380- 699 | 182 | 4.8 | 125 | 7.3 | 98 | 7 | 20 |
| 700- 1,299 | 125 | 3.3 | 133 | 7.7 | 100 | 6 | 27 |
| 1,300- 2,599 | 90 | 2.4 | 186 | 10.8 | 124 | 14 | 48 |
| 2,600- 4,999 | 51 | 1.3 | 194 | 11.3 | 119 | 25 | 50 |
| 5,000- 9,999 | 21 | 0.6 | 141 | 8.2 | 91 | 14 | 36 |
| 10,000-19,999 | 13 | 0.3 | 212 | 12.4 | 172 | 21 | 19 |
| 20,000-29,999 | 3 | 0.1 | 53 | 3.1 | 24 | 20 | 9 |
| 30,000-49,999 | 2 | 0.1 | 69 | 4.0 | 68 | (1/) | 1 |
| 50,000 and over | 2 | 0.1 | 248 | 14.5 | 232 | 5 | 11 |
| All classified ownerships | 3,761 | 100.0 | 1,716 | 100.0 | 1,289 | 133 | 294 |
| Unclassified | - | - | 38 | - | 5 | 1 | 32 |
| Total acreage | - | - | 1,754 | .. | 1,294 | 134 | 326 |

1/ Less than 500 acres.

Table 5.- Commercial forest land by type of ownership and by timber type, 1948

| Type of ownership | Total | | Timber type | | | |
|---|---|---|---|---|---|---|
| | | | Red-wood | Douglas-fir | Fir | Pine--Douglas-fir--Fir |
| | Thousand acres | Pct. | ------- Thousand acres ------ | | | |
| National forest | 292 | 16.8 | - | 245 | 19 | 28 |
| Indian land | 99 | 5.7 | 5 | 94 | - | - |
| Other Federal | 44 | 2.5 | 3 | 41 | - | - |
| Tax deeded | 5 | 0.3 | 1 | 4 | - | - |
| Other State, county and municipal | 6 | 0.3 | 5 | 1 | - | - |
| Timber operating company | 361 | 20.8 | 295 | 60 | - | 6 |
| Timber holding company | 65 | 3.7 | 37 | 28 | - | - |
| Timber operating individual | 29 | 1.7 | 11 | 17 | - | 1 |
| Timber holding individual | 272 | 15.6 | 134 | 129 | - | 9 |
| Range livestock farming company | 25 | 1.4 | 2 | 23 | - | - |
| Range livestock farming individual | 365 | 21.0 | 58 | 296 | - | 11 |
| Other farmers | 83 | 4.8 | 34 | 49 | - | - |
| Recreational property owners | 29 | 1.7 | 6 | 23 | - | (1/) |
| Other classified owners | 60 | 3.4 | 20 | 38 | - | 2 |
| Unclassified | 5 | 0.3 | 4 | 1 | - | - |
| All types | 1,740 | 100.0 | 615 | 1,049 | 19 | 57 |

1/ Less than 500 acres.

Table 6.- Privately owned commercial forest land by size of ownership and timber type, 1948

| Size of ownership | Total | | Timber type | | | |
|---|---|---|---|---|---|---|
| | | | Red-wood | Douglas-fir | Fir | Pine--Douglas-fir--Fir |
| Acres | Thousand acres | Pct. | Thousand acres | | | |
| 1- 179 | 169 | 13.1 | 53 | 111 | - | 5 |
| 180- 379 | 92 | 7.1 | 26 | 64 | - | 2 |
| 380- 699 | 98 | 7.6 | 31 | 65 | - | 2 |
| 700- 1,299 | 100 | 7.8 | 25 | 69 | - | 6 |
| 1,300- 2,599 | 124 | 9.6 | 33 | 90 | - | 1 |
| 2,600- 4,999 | 119 | 9.2 | 29 | 88 | - | 2 |
| 5,000- 9,999 | 91 | 7.1 | 30 | 56 | - | 5 |
| 10,000-19,999 | 172 | 13.3 | 94 | 77 | - | 1 |
| 20,000-29,999 | 24 | 1.9 | - | 21 | - | 3 |
| 30,000-49,999 | 68 | 5.3 | 63 | 3 | - | 2 |
| 50,000 and over | 232 | 18.0 | 213 | 19 | - | - |
| All classified ownerships | 1,289 | 100.0 | 597 | 663 | - | 29 |
| Unclassified | 5 | - | 4 | 1 | - | - |
| Total acreage | 1,294 | - | 601 | 664 | - | 29 |

Table 7.- Commercial forest land by type of ownership and by age class of timber, 1948

| Type of ownership | Total | | Age class | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Old growth | Old growth-young | Young growth-old | Large young growth | Small young growth | Non-stocked 1/ |
| | Thousand acres | Pct. | Thousand acres | | | | | |
| National forest | 292 | 16.8 | 10 | 169 | 54 | 21 | 10 | 28 |
| Indian land | 99 | 5.7 | 5 | 71 | 4 | 3 | 2 | 14 |
| Other federal | 44 | 2.5 | 1 | 18 | 11 | 7 | 1 | 6 |
| Tax deeded | 5 | 0.3 | - | 1 | 1 | 1 | 1 | 1 |
| Other State, county and municipal | 6 | 0.3 | 2 | 1 | 1 | 1 | (2/) | 1 |
| Timber operating company | 361 | 20.8 | 92 | 104 | 26 | 45 | 59 | 35 |
| Timber holding company | 65 | 3.7 | 9 | 23 | 4 | 23 | 2 | 4 |
| Timber operating individual | 29 | 1.7 | 4 | 14 | 5 | 3 | 1 | 2 |
| Timber holding individual | 272 | 15.6 | 34 | 128 | 39 | 43 | 12 | 16 |
| Range livestock farming company | 25 | 1.4 | 2 | 3 | 6 | 12 | (2/) | 2 |
| Range livestock farming individual | 365 | 21.0 | 16 | 99 | 80 | 115 | 14 | 41 |
| Other farmers | 83 | 4.8 | 3 | 23 | 11 | 21 | 4 | 21 |
| Recreational property owners | 29 | 1.7 | 2 | 8 | 8 | 7 | 1 | 3 |
| Other classified owners | 60 | 3.4 | 1 | 17 | 10 | 17 | 6 | 9 |
| Unclassified | 5 | 0.3 | (2/) | (2/) | (2/) | 4 | 1 | (2/) |
| All types | 1,740 | 100.0 | 181 | 679 | 260 | 323 | 114 | 183 |

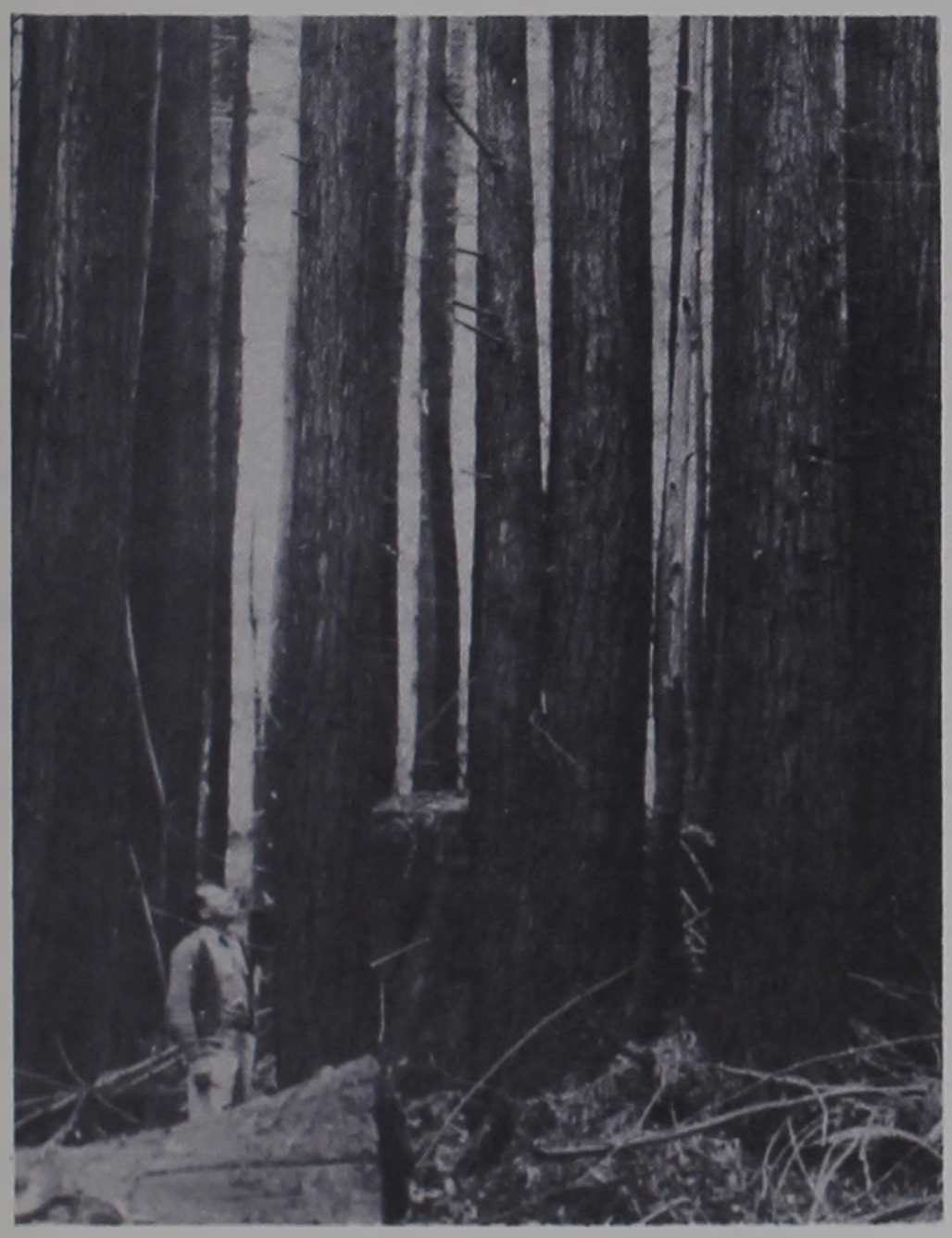
1/ Commercial forest land nonstocked with commercial conifers but covered primarily with hardwoods and chaparral.

2/ Less than 500 acres.

# AGE CLASSES OF TIMBER STANDS ON COMMERCIAL FOREST LAND

Old growth

Young growth - old growth



Large young growth

Small young growth

Table 8.- Privately owned commercial forest land by size of ownership and by age class of timber, 1948

| Size of ownership | Total | Age class: Old growth-old growth | Old growth-young growth | Young growth-old growth | Young growth-young growth | Large young growth | Small young growth | Non-stocked |
|---|---|---|---|---|---|---|---|---|
| Acres | Thousand acres | Pct. | Thousand acres | | | | | |
| 1- 179 | 169 | 13.1 | 11 | 66 | 28 | 39 | 5 | 20 |
| 180- 379 | 92 | 7.1 | 4 | 36 | 17 | 17 | 4 | 14 |
| 380- 699 | 98 | 7.6 | 7 | 34 | 16 | 26 | 2 | 13 |
| 700- 1,299 | 100 | 7.8 | 5 | 31 | 23 | 21 | 6 | 14 |
| 1,300- 2,599 | 124 | 9.6 | 11 | 48 | 19 | 28 | 5 | 13 |
| 2,600- 4,999 | 119 | 9.2 | 12 | 31 | 23 | 35 | 5 | 13 |
| 5,000- 9,999 | 91 | 7.1 | 5 | 21 | 17 | 33 | 7 | 8 |
| 10,000-19,999 | 172 | 13.3 | 32 | 53 | 23 | 44 | 11 | 9 |
| 20,000-29,999 | 24 | 1.9 | - | 9 | 4 | 8 | 2 | 1 |
| 30,000-49,999 | 68 | 5.3 | 22 | 27 | 5 | 5 | 4 | 5 |
| 50,000 and over | 232 | 18.0 | 54 | 63 | 14 | 30 | 48 | 23 |
| All classified ownerships | 1,289 | 100.0 | 163 | 419 | 189 | 286 | 99 | 133 |
| Unclassified | 5 | - | (1/) | (1/) | (1/) | 4 | 1 | (1/) |
| Total acreage | 1,294 | - | 163 | 419 | 189 | 290 | 100 | 133 |

1/ Less than 500 acres.

Table 9.- Commercial forest land by age class of timber and by density of stand, 1948

| Age class | Total | Density of stand: Dense and semidense | Open | Very open | Non-stocked |
|---|---|---|---|---|---|
| | Thousand acres | | | | |
| Old growth | 181 | 168 | 7 | 6 | - |
| Old growth-young growth | 679 | 416 | 200 | 63 | - |
| Young growth-old growth | 260 | 129 | 90 | 41 | - |
| Large young growth | 323 | 209 | 73 | 41 | - |
| Small young growth | 114 | 19 | 39 | 56 | - |
| Nonstocked | 183 | - | - | - | 183 |
| Total | 1,740 | 941 | 409 | 207 | 183 |

Table 10.- Commercial forest land by timber type and by site quality, 1948

| Timber type | Total | Site quality: High | Medium | Low |
|---|---|---|---|---|
| | Thousand acres | | | |
| Redwood | 615 | 569 | 44 | 2 |
| Douglas-fir | 1,049 | 708 | 278 | 63 |
| Pine--Douglas-fir--Fir | 57 | 40 | 17 | - |
| Fir | 19 | 3 | 16 | - |
| All types | 1,740 | 1,320 | 355 | 65 |

Table 11.- Commercial forest land area by timber type, stand-size class, degree of stocking, and ownership, 1948

| Timber type and stand-size class1/ | All areas | | | Degree of stocking2/ and ownership: Well-stocked | | | Medium-stocked | | | Poorly stocked | | | Nonstocked | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Public | Private | Total | Public | Private | Total | Public | Private | Total | Public | Private | Total | Public | Private |
| | Thousand acres | | | | | | | | | | | | | | |
| Redwood | | | | | | | | | | | | | | | |
| Old-growth saw timber | 278 | 8 | 270 | 237 | 7 | 230 | 32 | 1 | 31 | 9 | - | 9 | - | - | - |
| Young-growth saw timber | 192 | 3 | 189 | 105 | 2 | 103 | 61 | 1 | 60 | 26 | (3/) | 26 | - | - | - |
| Pole timber | 88 | 1 | 87 | 13 | (3/) | 13 | 31 | 1 | 30 | 44 | (3/) | 44 | - | - | - |
| Nonstocked | 57 | 2 | 55 | - | - | - | - | - | - | - | - | - | 57 | 2 | 55 |
| Total | 615 | 14 | 601 | 355 | 9 | 346 | 124 | 3 | 121 | 79 | (3/) | 79 | 57 | 2 | 55 |
| Douglas-fir | | | | | | | | | | | | | | | |
| Old-growth saw timber | 542 | 245 | 297 | 321 | 143 | 178 | 165 | 66 | 99 | 56 | 36 | 20 | - | - | - |
| Young-growth saw timber | 367 | 88 | 279 | 216 | 57 | 159 | 97 | 20 | 77 | 54 | 11 | 43 | - | - | - |
| Pole timber | 22 | 10 | 12 | 5 | 3 | 2 | 6 | 2 | 4 | 11 | 5 | 6 | - | - | - |
| Nonstocked | 118 | 42 | 76 | - | - | - | - | - | - | - | - | - | 118 | 42 | 76 |
| Total | 1,049 | 385 | 664 | 542 | 203 | 339 | 268 | 88 | 180 | 121 | 52 | 69 | 118 | 42 | 76 |
| Fir | | | | | | | | | | | | | | | |
| Old-growth saw timber | 8 | 8 | - | 4 | 4 | - | 2 | 2 | - | 2 | 2 | - | - | - | - |
| Young-growth saw timber | 5 | 5 | - | 4 | 4 | - | 1 | 1 | - | - | - | - | - | - | - |
| Pole timber | 2 | 2 | - | - | - | - | 1 | 1 | - | 1 | 1 | - | - | - | - |
| Nonstocked | 4 | 4 | - | - | - | - | - | - | - | - | - | - | 4 | 4 | - |
| Total | 19 | 19 | - | 8 | 8 | - | 4 | 4 | - | 3 | 3 | - | 4 | 4 | - |
| Pine--Douglas-fir--Fir | | | | | | | | | | | | | | | |
| Old-growth saw timber | 32 | 17 | 15 | 22 | 11 | 11 | 8 | 5 | 3 | 2 | 1 | 1 | - | - | - |
| Young-growth saw timber | 19 | 8 | 11 | 13 | 6 | 7 | 4 | (3/) | 4 | 2 | 2 | (3/) | - | - | - |
| Pole timber | 2 | 1 | 1 | 1 | 1 | (3/) | 1 | (3/) | 1 | (3/) | (3/) | - | - | - | - |
| Nonstocked | 4 | 2 | 2 | - | - | - | - | - | - | - | - | - | 4 | 2 | 2 |
| Total | 57 | 28 | 29 | 36 | 18 | 18 | 13 | 5 | 8 | 4 | 3 | 1 | 4 | 2 | 2 |
| All types | | | | | | | | | | | | | | | |
| Old-growth saw timber | 860 | 278 | 582 | 564 | 165 | 419 | 207 | 74 | 133 | 69 | 39 | 30 | - | - | - |
| Young-growth saw timber | 583 | 104 | 479 | 338 | 69 | 269 | 163 | 22 | 141 | 82 | 13 | 69 | - | - | - |
| Pole timber | 114 | 14 | 100 | 19 | 4 | 15 | 39 | 4 | 35 | 56 | 6 | 50 | - | - | - |
| Nonstocked | 183 | 50 | 133 | - | - | - | - | - | - | - | - | - | 183 | 50 | 133 |
| Total | 1,740 | 446 | 1,294 | 941 | 238 | 703 | 409 | 100 | 309 | 207 | 58 | 149 | 183 | 50 | 133 |

1/ See relationship of stand-size classes to age classes, page 16.
2/ To obtain degree of stocking, Survey density classes (see page 20) were converted as follows: dense and semi-dense--well stocked; open--medium stocked; and very open--poorly stocked.
3/ Less than 500 acres.

# PROCEDURES

## Area Delineation

To determine the extent, location, and condition of all forest lands in Humboldt County, aerial photographs were delineated on the basis of (1) present cover of vegetation, (2) suitability for growing timber crops, and (3) age class and density of timber stands. The minimum unit classified and mapped under the Federal Survey was forty acres. However, under a cooperative agreement with the State Division of Forestry, classification and mapping were extended to a 10-acre minimum on lands outside the national forest boundary.

The segregation of timber-growing lands from other lands was difficult where commercial conifers were missing from the area. It has been assumed on the basis of their location that such areas once supported timber stands and will do so again if reforested. While this assumption may be true in most cases, as verified by observation and historical evidence, a soil survey in part of the timbered area of Humboldt County has demonstrated that some nonstocked areas classified as commercial forest land in this report may be reclassified as a consequence of the soil survey findings.

## Transfer to Base Maps

After photo delineation was completed, Timber Stand Maps were prepared by transferring photo classifications to 7-1/2-minute quadrangle size base maps at a common scale of 2 inches to the mile. Kind and density of vegetation, age-structure and density of coniferous timber stands, and other information pertinent to the forest resource are shown. As a final preparation for area measurement other related information such as political and economic subdivisions, ownership, and commercial timber type boundaries were marked along east-west transect lines spaced 2 miles apart. Inasmuch as there were changes in the timber classifications caused by cutting and fire since the date of aerial photography, adjustments of age-density classes were made along these transect lines following the field examination so that the class acreages when compiled would show conditions as of the inventory year.

## Ownership Determination

Information on land ownership in Humboldt County was obtained from the county tax assessment rolls, and other official records of the County Assessor and Tax Collector, using a line sampling technique.1/

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1/ Details of the line sampling method used for estimating area and procedure for estimating number of owners are given in "A New Approach to Forest Ownership Surveys," by A. A. Hasel and Adon Poli, Land Economics, Vol. XXV, No. 1, Feb. 1949, pp. 1-10.

Parallel lines spaced 2 miles apart were drawn on the quadrangle base maps. Ownership boundaries, taken from county plat maps, were marked along these lines. The proportion of total line traversing an ownership class was taken as the proportion of the total acreage in that particular class. This acreage was classified further by measuring the intercepts of the various vegetation and timber stand classifications used in the Forest Survey.

Owners of properties traversed by the sample lines constituted the ownership sample. The county property records provided the address of the owner, and the acreage of each parcel of land in the sample. The acreage figures were used to classify private ownerships and land area by size. Each sample owner was mailed a questionnaire card by the State Division of Forestry. Answers on these cards provided information used to classify the sample ownerships as to type of ownership. Similar information about the land of the nonrespondents was obtained by a field followup, in which key informants were questioned in local public offices and in the communities where the owners have their land.

## Area Measurement and Compilation

To estimate the areas, parallel lines spaced 2 miles apart were drawn east and west on the quadrangle base maps. Acreage figures were then obtained by recording line intercept measurements of all pertinent class subdivisions along each of the sample lines transecting the quadrangles. These subdivisions included age, density, and type of timber stands and type and size of ownership. The ratio of total line length to total area for the quadrangle provided the factor to convert line segments in inches to area in acres. These acreages were then totaled by county, and adjusted if necessary to check with the 1940 Bureau of Census acreages by counties. Estimated acreage figures appearing in the tables were compiled and summarized by means of punch cards and card tabulating equipment.

## Stand-size Class Determination

The national pattern established for Forest Survey requires the classification of commercial forest land into stand-size classes. In order to present the California forest resource data in terms of stand-size classes, mapped age classes have been grouped as follows:

| Age class | Stand-size class |
|---|---|
| Old growth<br>Old growth-young growth | Old-growth saw timber |
| Young growth-old growth<br>Large young growth | Young-growth saw timber |
| Small young growth | Pole timber |
| Nonstocked | Nonstocked |

The forest stands classified as saw timber by this grouping conform closely to the National Forest Survey definitions. Areas of seedlings and saplings are not shown separately because these areas occurred in such small and widely scattered units that separate classification was not practicable. Those seedling and sapling stands of 40 acres or more which did occur were included with other stand-size classes, chiefly pole timber and nonstocked.

## Site Quality Determination

Three broad site classes: high, medium, and low, have been used to express the relative capacity of commercial forest land to produce timber crops. Five hundred and eighty-seven separate field site determinations, well distributed over the four major timber types, were grouped into these three classes. For each type the number of site determinations in each site class was expressed as a percentage of all observations within the type. These percentages were then applied to the total area by type to provide estimates of relative site quality.

The relationship between the broad site quality classes--high, medium, and low--and site class and site index ratings of commercial forest land is shown in the following table and explained in the appended footnotes.

| Broad rating | Redwood and Douglas-fir types: Site class[1/] | Redwood and Douglas-fir types: Site index[2/] | All other types: Site class[3/] | All other types: Site index[4/] |
|---|---|---|---|---|
| High | I, II | 200 | IA | 200 |
| | | 170 | | |
| | III | 140 | I | 175 |
| Medium | | | II | 150 |
| | IV | 110 | III | 125 |
| Low | | | IV | 100 |
| | V | 80 | V | 75 |

1/ According to R. E. McArdle and W. H. Meyer in U. S. Department of Agriculture Technical Bulletin 201, October, 1930, "The Yield of Douglas-fir in the Pacific Northwest."

2/ The total height that the average dominant Douglas-fir trees reach at 100 years of age.

3/ According to D. Dunning in Research Note No. 28, December 1, 1942, "A Site Classification for the Mixed-Conifer Selection Forests of the Sierra Nevada," California Forest and Range Experiment Station.

4/ The total height that the average dominant trees reach at 300 years of age.

## ACCURACY OF ESTIMATE

Estimates of acreages in the various land classes as determined by Forest Survey procedures are subject to two general types of errors: (1) non-sampling errors in photo classification, mapping, tabulation, computation, and compilation, and (2) sampling errors which arise from taking a sample rather than making a complete inventory. Errors of the first type are kept to a minimum by frequent checking and close supervision of all field and office work. If these nonsampling errors are negligible or compensating, then the sampling errors provide measures of the reliability of the acreage estimates and can be computed by statistical methods. Magnitudes of the sampling errors depend on the intensity of the sampling and the variability of the data.

For the principal forest land classes of Humboldt County, the sampling errors[2/] are as follows:

| Class | Sampling error | |
|---|---|---|
| | Acres | Percent |
| Forest land | 28,995 | 1.49 |
| Commercial forest land | 27,492 | 1.58 |
| Noncommercial forest land | 9,455 | 4.59 |

Statistics of forest area by age class, type, and ownership classes presented in this report are subject to increasing sampling errors as the class acreages decrease. A partial range of area sampling errors applicable to areas in this report is shown below:

| Acres in class | Sampling error in percent |
|---|---|
| 10,000 | 21.0 |
| 20,000 | 14.5 |
| 40,000 | 10.5 |
| 100,000 | 6.5 |
| 200,000 | 4.5 |
| 500,000 | 3.0 |
| 1,000,000 | 2.0 |
| 2,000,000 | 1.5 |

---

2/ For one standard error; that is, the chances are two out of three that the class acreages as determined by 100-percent measurement lie within the limits of the calculated acreages plus and minus the amounts shown.

## DEFINITION OF TERMS

### Area

Forest land area. Includes (a) lands which are at least 10 percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting an influence on the climate or on the water regime; (b) land from which the trees described in (a) have been removed to less than 10 percent stocking and which have not been developed for other use; (c) afforested areas; and (d) chaparral areas.

Commercial forest land area. Forest land which (a) is producing, or physically capable of producing, usable crops of wood (usually saw-timber), (b) economically available now or prospectively, and (c) not withdrawn from timber utilization.

Noncommercial forest land area. Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land and (b) incapable of yielding wood products (usually saw timber) because of adverse site conditions, or so physically inaccessible as to be unavailable economically in the foreseeable future.

Chaparral land area. Lands supporting heavily branched dwarf trees or shrubs, usually evergreen, the crown cover of which normally covers more than 50 percent of the ground and whose primary value is watershed protection. The more common chaparral constituents are species of Quercus, Cercocarpus, Garrya, Ceanothus, Arctostaphylos, and Adenostoma. Types dominated by such shrubs as Artemisia, Opuntia, Purshia, Guttierrezia, or semi-desert species are not commonly considered chaparral.

Nonforest land area. Land that does not qualify as forest land. Includes land which has never supported forest growth; land from which the forest has been removed to less than 10 percent stocking and has been developed for other use, such as grazing, agricultural, residential, or industrial; all land in thickly populated urban and suburban areas; and water classified by the Bureau of Census as land.

### Timber Stand Classifications

Age classes of commercial conifer stands[3/] on commercial and reserved commercial forest land.

1. Old growth. Mature trees[4/] compose more than 80 percent of the conifer canopy.

---

3/ Stands composed of the following species, singly or in combination: redwood, ponderosa pine, Douglas-fir, sugar pine, Jeffrey pine, true firs (red and white), incense cedar, western white pine, mountain hemlock, and lodgepole pine.

4/ All trees that can be considered as having passed their optimum growth, specifically Dunning's tree classes 3, 4, 5, 5a and 7. Immature trees fall within Dunning's tree classes 1, 2, and 6.

2. Old growth--young growth. Mature trees compose from 50 to 80 percent of the conifer canopy.

3. Young growth--old growth. Mature trees compose 20 to 50 percent of the conifer canopy.

4. Young growth. Mature trees compose less than 20 percent of the conifer canopy.

   a. Large young growth. More than 5 percent of the immature trees are larger than 11.0 inches d.b.h.

   b. Small young growth. Ninety-five percent or more of the immature trees are less than 11 inches d.b.h.

Density classes of commercial conifer stands on commercial forest land.

1. Dense and semidense. Commercial conifers cover 50 percent or more of the ground space.

2. Open. Commercial conifers cover from 20 to 50 percent of the ground space.

3. Very open. Commercial conifers cover from 5 to 20 percent of the ground space.

4. Nonstocked. Commercial conifers cover less than 5 percent of the ground space.

Timber type. An extensive area of commercial or withdrawn commercial forest land characterized by a predominant conifer species or group of conifer species. Other vegetation (such as hardwood and chaparral areas) and/or nonvegetation types (such as barren areas) may also occur in subordinate amounts within the same area.

Commercial timber types

a. Redwood. Areas with redwood comprising 20 percent or more of the commercial-conifer cover.

b. Douglas-fir. Areas with Douglas-fir comprising more than 80 percent of the commercial-conifer cover; or mixtures of Douglas-fir and true firs in which Douglas-fir comprises 20 percent or more of the commercial conifer cover.

c. Pine--Douglas-fir--Fir. Areas with mixtures of the commercial pines and either Douglas-fir or the true firs in which the pines, Douglas-fir, and true firs each comprise 20 percent or more of the commercial-conifer cover.

d. Fir. Areas with true firs (white and red) comprising more than 80 percent of the commercial conifer cover; or mixtures of the true firs and lodgepole pine, mountain hemlock, or western white pine, in which the true firs comprise 20 percent or more of the timber cover.

Other timber and vegetation types

a. Coniferous woodland. Areas with such trees as knobcone pine, digger pine, juniper, and scattered and scrub trees of other conifer species, covering more than 5 percent of the ground space and predominant over hardwoods that may partly compose the cover.

b. Hardwoods (woodland). Areas with hardwood trees (oaks, madrone, etc.), covering more than 50 percent of the ground except where in mixture with commercial conifers or herbaceous vegetation.

c. Woodland-grass. Areas with hardwood trees and herbaceous vegetation occurring in mixture--without commercial conifers--and the trees covering from 5 to 80 percent of the ground area and predominant over minor conifers present in the cover.

d. Shrub and herb types consist of the following, where not in mixtures with minor conifers or hardwoods.

1. Chaparral. Areas with such shrubs as manzanita, ceanothus, scrub oaks, etc., covering more than 50 percent of the ground.

2. Coastal sagebrush. Areas with such shrubs as California sagebrush, coyote brush, and wild buckwheats covering more than 50 percent of the ground.

3. Grass. Areas with grasses and associated herbaceous vegetation covering more than 50 percent of the ground except where the type qualifies as woodland-grass.

4. Marsh. Areas with herbaceous vegetation characteristic of very poorly drained areas.

Nonvegetation types

a. Barren. Bare ground, rocky areas, river beds, mine dredgings, and talus essentially devoid of vegetation.

b. Cultivated, urban, and industrial. Areas that are under cultivation or are used for residential or industrial purposes.

Stand-size classes

1. Saw-timber stands. Defined as stands having a minimum net volume per acre of 4,000 board feet, International 1/4-inch rule, in saw-timber trees (11.0 inches d.b.h. and larger for all species).

a. Old-growth saw-timber stands. Saw-timber stands in which over 50 percent of the net board-foot volume is in old-growth saw-timber trees.

b. Young-growth saw-timber stands. Saw-timber stands in which 50 percent or more of the net board-foot volume is in young-growth saw-timber trees.

2. Pole-timber stands. Defined as stands failing to meet the saw-timber stand specification, but at least 10 percent stocked with pole-timber and larger trees and with at least half the minimum stocking in pole-timber trees (5.0 to 10.9 inches d.b.h.).

3. Seedling and sapling stands. Defined as forest stands not qualifying as either saw-timber or pole-timber stands but having at least 10 percent stocking of trees and with at least half the minimum stocking in seedlings and saplings (0 to 4.9 inches d.b.h.).

4. Nonstocked areas. Defined as areas of forest land not qualifying as saw-timber, pole-timber, or seedling and sapling stands.

## Ownership Classifications

National forest. Federal lands which, by executive order or statute, have been designated as national forests, purchase units, or experimental areas or have been placed under the administration of the Forest Service.

Indian land. Indian tribal lands and trust allotments. Lands held in trust by the Federal Government but administered and managed for Indian tribal groups or allotted in trust to individual Indians.

Other Federal. All other lands owned by the Federal Government not classed as national forest or Indian land.

Tax deeded. Former privately owned land now deeded to the State for nonpayment of taxes.

Other State, county, and municipal. Lands in State, county, or municipal ownership other than tax-deeded.

Timber operating company. A corporation actively engaged in commercial logging and milling of timber as a major enterprise.

Timber holding company. A corporation holding timber land for future commercial timber operations. The timber may be held for the company's own future use or to sell to other operators.

Timber operating individual. A person whose major enterprise is commercial timber operations. This includes individuals logging timber, operating a large or small sawmill, or splitting timber commercially for sale.

Timber holding individual. A person holding timber land for future commercial timber operations. The timber may be held for his own future operations or to sell to other operators.

Range livestock farming company. A corporation engaged primarily in range livestock farming operations.

Range livestock farming individual. A person whose major enterprise is range livestock farming.

Other farmers. Persons or corporations that have farming as their major activity, but whose principal agricultural enterprise is not range livestock farming.

Recreational property owners. Persons or corporations holding land principally for recreational purposes.

Other classified owners. All other land owners whose classification is known but does not logically fit the classes listed above. Examples are owners of land held for residential purposes only, mining claims, and reservoir sites.

Unclassified. Land ownerships in urban, suburban, and industrial settlements that are too small to map and classify properly, and ownerships that for other reasons cannot be classified and placed in appropriate categories.

This report is from the
Forest Survey
Division of Forest Economics
E. V. Roberts, In charge

and prepared in cooperation with
Bureau of the Census
U. S. Department of Commerce

The California Forest and Range Experiment Station
is maintained at Berkeley in cooperation with the
University of California

Agriculture--Berkeley

# FOREWORD

This report was prepared in the Forest Survey, Division of Forest Economics, California Forest and Range Experiment Station, as the result of a survey conducted jointly with the Bureau of the Census, U. S. Department of Commerce. Published with Census concurrence, the information in this report is preliminary; final figures will be published by the Bureau of the Census.

The California Station supplemented the Census survey in order to obtain more detailed information on the production of lumber by species, by counties, and by mill-size classes than is presented in Census releases on lumber production resulting from the Census sample surveys. The detailed information is useful locally in Forest Survey studies of rate of timber cutting in comparison to inventory and growth. Detailed lumber production figures are also useful in a variety of local economic studies, as evidenced by the many requests received by the California Station for such figures.

The California Station is indebted to a number of agencies and individuals who helped in various phases of its survey: (1) the sawmill operators of California and Nevada who provided their production figures, (2) the Division of Forestry of the California Department of Natural Resources, (3) the Forest Supervisors of the national forests of California, (4) the Intermountain Forest and Range Experiment Station at Ogden, Utah, and (5) the Division of Forest Economics of the U. S. Forest Service in Washington, D. C.

Within the California Station the author acknowledges help by several members of the Division of Forest Economics including E. V. Roberts, E. M. Hornibrook, R. M. Miller, and H. L. Baker. Particular thanks are due to: Miss Merriam Jacobsen (questionnaires), Mrs. Alma Smith (punch-cards), Miss Rose Perenin (typing), and Miss Audrey Kursinski (drafting).

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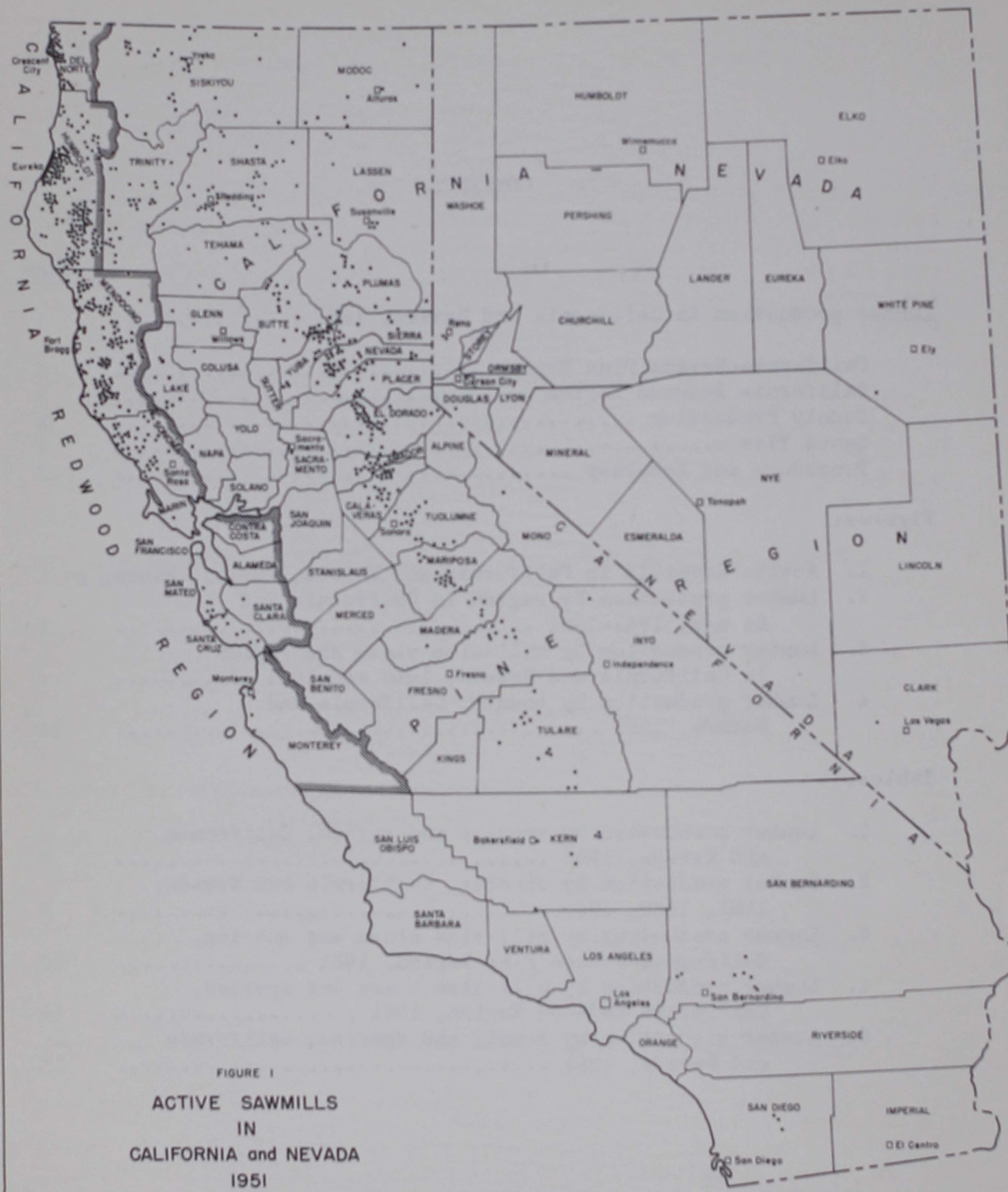


FIGURE 1

# ACTIVE SAWMILLS IN CALIFORNIA and NEVADA 1951

LEGEND

• Sawmill reporting production in 1951

Boundary between regions

Note: Mills operating in more than one county during the year are shown in the county where the mill was located at the end of the year.

# LUMBER PRODUCTION IN CALIFORNIA AND NEVADA, 1951 1/

By Richard H. May

Lumber production in California in 1951 exceeded all previous records. The estimated cut was 4.8 billion board feet. Nevada production of about 26 million board feet was higher than at any time in the past 80 years. The combined cut for both states--4,868,998,000 board feet--was about 14 percent higher than the production reported by the Bureau of the Census for 1950.

These 1951 figures are the preliminary results of a cooperative survey by the Bureau of the Census and the Forest Service which together received reports from 93.0 percent of all active sawmills. These mills produced 98.6 percent of the total estimated volume of lumber. The survey included all lumber sawed in California and Nevada regardless of source of logs.

Three features of the high production in 1951 are especially interesting:

(1) For the first time, the production of Douglas-fir led that of all other species. The leading position was formerly held by ponderosa pine. In 1951, 810 million board feet of Douglas-fir was cut in Humboldt County alone, but as recently as 1947 the total cut of Douglas-fir in all of California was only 769 million.

(2) The California Redwood Region 2/ produced a greater proportion of the State total (about 42 percent), than in any of the years for which regional records are available (since 1920). This was due to the large increase in the cut of Douglas-fir.

(3) About 25 percent of the State total was cut in Humboldt County and 12 percent in Mendocino. Thus, the two leading lumber-producing counties of California, both in the Redwood Region, cut more than a third of the State total.

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1/ Preliminary figures pending final 1951 summary publication to be released by the Bureau of the Census.

2/ The Redwood Region as used here (see map) follows the Bureau of the Census definition and includes primarily the coastal counties enclosing the natural range of redwood. It is not identical with the Redwood--Douglas-fir subregion as used by Forest Survey, which cuts across some counties, including western Siskiyou County and excluding eastern Mendocino County.

The record cut for 1951 continues a trend observed since World War II (Fig. 2). Beginning with 1946 the volume of lumber sawed in California--Nevada has been successively greater each year except 1949. The production of 1951 is almost twice as great as that of 1946. The Redwood Region has been assuming a continually greater share of the State cut, though the California--Nevada Pine Region (Fig. 1) still accounts for almost 60 percent of the total.

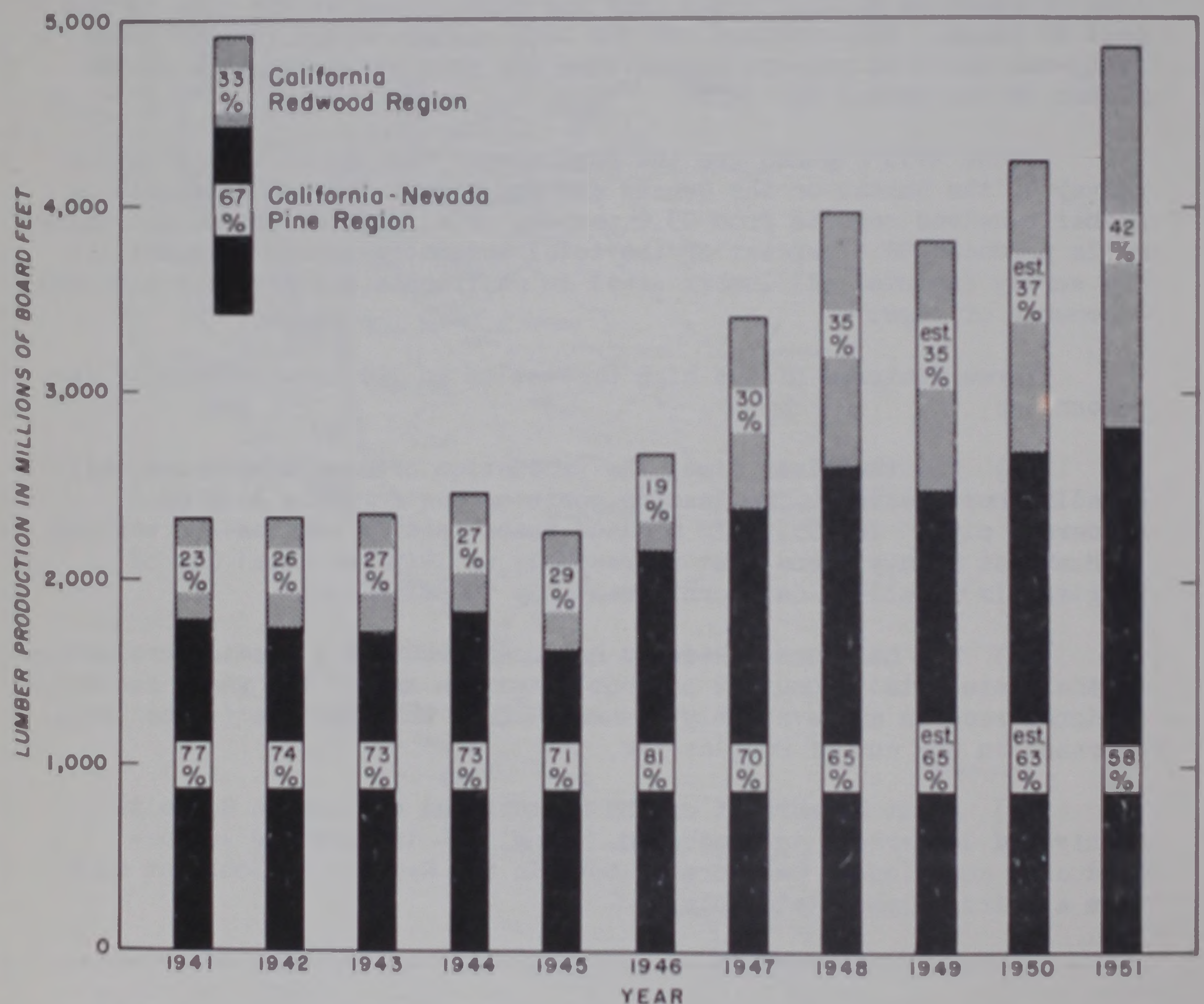


Figure 2.- Lumber production by region in California and Nevada, 1941-1951.

Ponderosa pine led the Pine Region in production by species; white fir was second. Douglas-fir was the leading species in the Redwood Region with redwood second (Table 1). These four species made up about 90 percent of the entire production in California and Nevada.

Active sawmills numbered 801, of which 409 were in the Pine Region (five of these in Nevada) and 392 in the Redwood Region. This is a significant reduction since 1948, when there were 971 active sawmills in California alone (578 mills in the Pine Region and 393 in the Redwood),3/ and 13 mills in Nevada. Practically all the recent reduction in number of mills has occurred in the Pine Region. Offsetting this decrease in number of mills, the average production per mill increased, and total production in this region was therefore greater than in previous years.

In rising to top rank Douglas-fir production increased almost one-half million board feet from 1949 to 1951 (Table 2). The production of true firs (mainly white fir) more than doubled in two years. Production of ponderosa pine, sugar pine, and redwood during this period did not change greatly.

## California-Nevada Pine Region

The 409 active sawmills of the Pine Region produced an estimated 2,806,810 M board feet of lumber, rough green basis (Table 3). Ponderosa and sugar pines, Douglas-fir, and white fir together accounted for about 96 percent of this regional total.

The 26 largest mills, those cutting 25 million board feet or more, produced 43 percent of the regional total, and the small mills, cutting less than 10 million board feet, produced 25 percent. The medium classes, cutting between 10 and 25 million board feet, accounted for a considerably greater share of regional production in 1951 than in 1948 (Figure 3). This is primarily due to increased production in established mills, though some new mills of medium size have come into production during the past three years.

## California Redwood Region

The 392 active sawmills of the Redwood Region produced an estimated 2,062,188 M board feet of lumber, rough green basis (Table 4). Douglas-fir and redwood together accounted for about 97 percent of this regional total.

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3/ "Estimated Lumber Production in California - 1948," California Forest and Range Experiment Station, Forest Research Note No. 65, December 8, 1949.

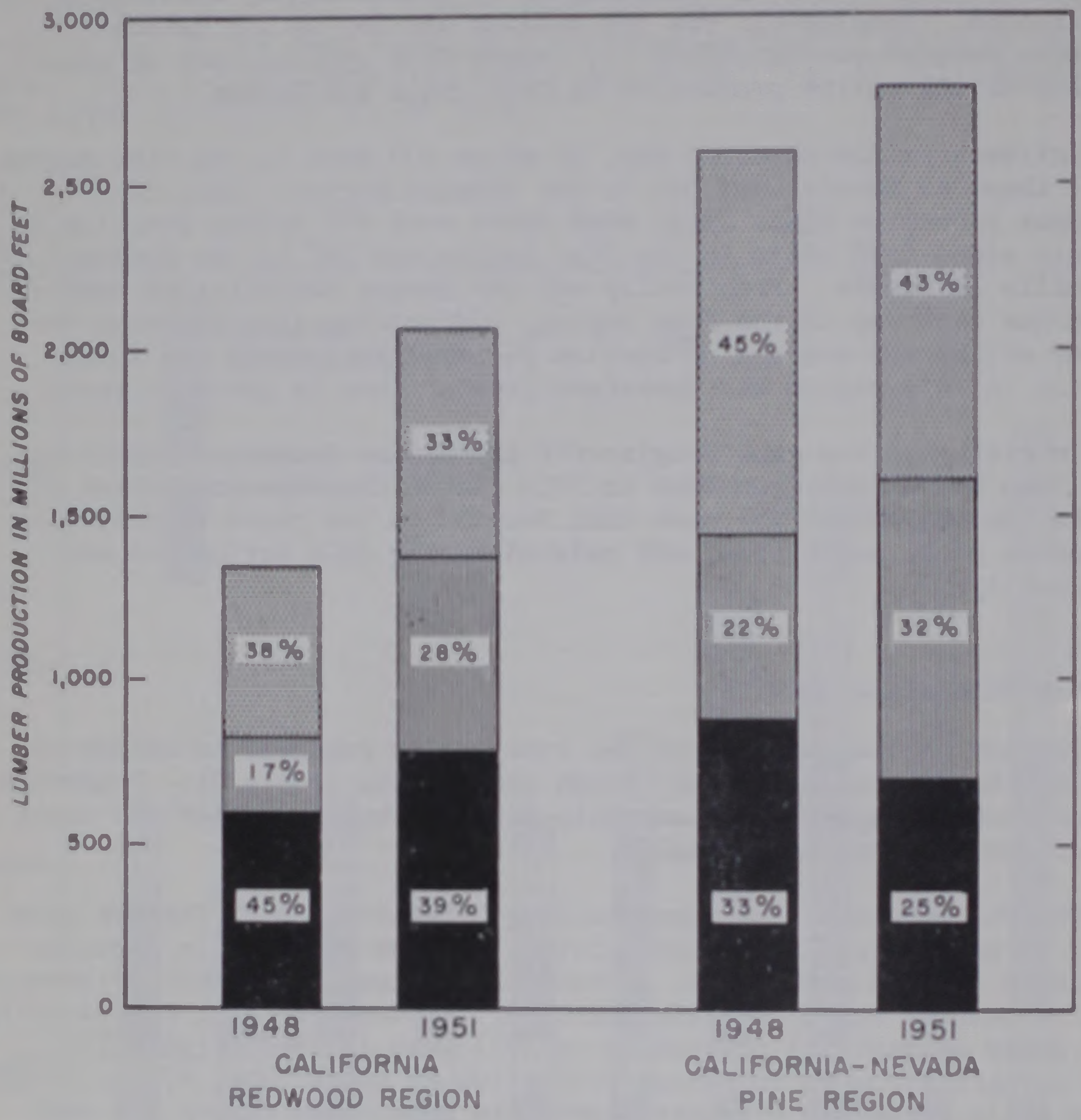


Figure 3.- Lumber production by mill-size class and region in California and Nevada, 1948 and 1951

The 16 largest mills produced 33 percent of the regional total; the small mills 39 percent. The medium classes, accounting for 28 percent of regional production, showed an increase in their share of regional production when compared with 1948 (Figure 3). Newly established mills were responsible for most of the increase, though some old mills stepped up their output.

County Production

Forty of the 58 counties in California reported production of lumber in 1951. In Nevada four of the 17 counties contained active sawmills (Table 5).

Ten counties of California produced about three-fourths of the State total. The following tabulation compares the production of the ten leading counties for 1951 and 1948 (the latest previous year for which similar data are available):

| | 1951 | | 1948 | |
|---|---|---|---|---|
| Rank | County | M bd. ft. | County | M bd. ft. |
| 1 | Humboldt | 1,223,447 | Humboldt | 815,810 |
| 2 | Mendocino | 585,596 | Mendocino | 386,920 |
| 3 | Siskiyou | 374,172 | Siskiyou | 374,010 |
| 4 | Shasta | 301,144 | Plumas | 258,740 |
| 5 | Lassen | 257,156 | Lassen | 232,180 |
| 6 | Plumas | 243,798 | Shasta | 203,160 |
| 7 | Eldorado | 173,541 | Eldorado | 199,740 |
| 8 | Trinity | 172,887 | Butte | 194,340 |
| 9 | Butte | 169,282 | Tuolumne | 166,340 |
| 10 | Tuolumne | 168,200 | Yuba | 129,210 |
| Total 10 leading counties | | 3,669,223 | | 2,933,450 |
| California State total | | 4,843,108 | | 3,962,910 |

Trinity County, the only new name in the top ten of 1951, came into eighth place while Yuba County dropped below tenth. Humboldt, Mendocino, Shasta, and Trinity counties each increased their production about 50 percent. Production in Humboldt County increased by 407 million board feet in the 3-year period, and in 1951 this one county was responsible for 25 percent of the State total.

The output (25,890 M board feet) of the four producing Nevada counties (Table 5), although small in comparison with the leading lumber counties in California, was the largest in Nevada for any year of record since 1869 when a cut of 35,025 M board feet was reported.

## Sawed Ties

Of some 800 sawmills in California and Nevada, about 50 produced ties. The volume of ties was approximately 50 million board feet, which represents 1 percent of total lumber production, or 8 percent of the lumber production of mills cutting ties. Figures on 1951 tie production are tabulated below:

| Sawmill-size class | California-Nevada Pine Region | | California Redwood Region | | Total California-Nevada | |
|---|---|---|---|---|---|---|
| | No. of mills cutting ties | Volume of ties cut | No. of mills cutting ties | Volume of ties cut | No. of mills cutting ties | Volume of ties cut |
| | | M bd.ft. | | M bd.ft. | | M bd.ft. |
| 0 - 4 (1-9,999 M bd.ft.) | 2 | 278 | 35 | 32,157 | 37 | 32,435 |
| 5 - 8 (10,000 M bd.ft. and more) | 8 | 12,011 | 5 | 5,208 | 13 | 17,219 |
| All classes | 10 | 12,289 | 40 | 37,365 | 50 | 49,654 |

About 65 percent of all ties were cut in small mills of the Redwood Region, chiefly in Humboldt County. Two of the large mills in the Pine Region specialized in tie production and produced most of the volume shown for that region. Most of the ties in both regions were cut from Douglas-fir.

## Procedure and Accuracy

A complete list of the sawmills of California was obtained by the California Forest and Range Experiment Station through the cooperation of the U. S. Bureau of the Census, the Forest Supervisors of the national forests in California, and officials of the California State Division of Forestry.

The Bureau of the Census during 1951 made a quarterly survey of the production of about 170 sample sawmills. These included all the largest sawmills, and a sample of the smaller mills. The Forest Service canvassed all other sawmills by mail. The California Station covered the California mills, while the Intermountain Forest and Range Experiment Station, with the cooperation of Region 4 of the Forest Service, obtained information from the Nevada mills.

Production figures were obtained from all sawmills cutting 5 million board feet or more in 1951, except for 2 mills in the Redwood Region which are estimated to have cut between 5 and 10 million board feet. California Station sampling was therefore confined to the smaller mills. A random sample was drawn from the California mills which had not replied to the Forest Service canvass (all Nevada mills had replied). These mills were visited in the field to determine their production. An estimate of the production of all non-replying mills was derived from the production of the sample mills.

The estimate of total production was then obtained by combining: (1) the production figures of Census sample mills, (2) the figures received by the Forest Service from sawmills not on the Census sample list, and (3) the estimates derived by statistical sampling procedures for mills not replying to the Forest Service mail canvass.

The completeness of reporting to the combined Census Bureau--Forest Service lumber production survey is indicated by the following tabulation:

| Lumber Region | Mills reporting | Volume produced by reporting mills |
|---|---|---|
| | ------ Percent of total ----- | |
| California-Nevada Pine | 95.1 | 99.4 |
| California Redwood | 90.8 | 97.7 |
| California-Nevada | 93.0 | 98.6 |

Therefore estimates were made for only 7 percent of the mills (55 in number) accounting for 1.4 percent of total production (65,317 M board feet).

Production estimates are subject to errors of reporting and also to the sampling errors of the production of mills not responding to the Forest Service mail inquiries or to the Bureau of the Census. Errors in reporting were kept to a minimum by careful editing of all reports, and follow-up questioning regarding doubtful figures. Sampling error is measured by variation in the production of the sample mills, and is expressed by sampling error as a percentage of total production. The calculated sampling error at one standard deviation is 0.35 percent for California-Nevada combined. By regions, the sampling error is 0.13 percent for Pine and 0.64 percent for Redwood. These sampling errors indicate the differences which may be expected between the Forest Service estimates of total production and what would have been obtained had production reports been received from every sawmill. The estimates will differ from the total production (as it might have been reported) by not more than the sampling error shown in two chances out of three, and by not more than twice the percentage shown in 19 chances out of 20.

Table 1.- Lumber production by species and region[1/]
California and Nevada, 1951

| Species | California-Nevada Pine Region | | California Redwood Region | | Total California and Nevada | |
|---|---|---|---|---|---|---|
| | Volume | Pct. | Volume | Pct. | Volume | Pct. |
| | M bd.ft. | | M bd.ft. | | M bd.ft. | |
| Softwoods | | | | | | |
| Douglas-fir | 464,233 | 16.5 | 1,146,726 | 55.6 | 1,610,959 | 33.1 |
| Ponderosa pine | 1,225,411 | 43.7 | 22,074 | 1.1 | 1,247,485 | 25.6 |
| Redwood | 1,886 | 0.1 | 857,990 | 41.6 | 859,876 | 17.7 |
| White fir | 673,661 | 24.0 | 0 | 0 | 673,661 | 13.8 |
| Sugar pine | 319,920 | 11.4 | 6,980 | 0.3 | 326,900 | 6.7 |
| Incense cedar | 81,044 | 2.9 | 40 | - | 81,084 | 1.7 |
| California red fir | 29,956 | 1.1 | 0 | 0 | 29,956 | 0.6 |
| Grand fir | 0 | 0 | 14,489 | 0.7 | 14,489 | 0.3 |
| Sitka spruce | 0 | 0 | 8,583 | 0.4 | 8,583 | 0.2 |
| Bigtree | 7,274 | 0.2 | 0 | 0 | 7,274 | 0.1 |
| Port Orford cedar | 0 | 0 | 3,239 | 0.2 | 3,239 | 0.1 |
| Lodgepole pine | 2,261 | 0.1 | 0 | 0 | 2,261) | |
| Western hemlock | 0 | 0 | 1,332 | 0.1 | 1,332) | |
| Digger pine | 631 | - | 0 | 0 | 631) | 0.1 |
| Monterey pine | 0 | 0 | 600 | - | 600) | |
| Western white pine | 298 | - | 0 | 0 | 298) | |
| Western red cedar | 0 | 0 | 20 | - | 20) | |
| Total softwoods | 2,806,575 | - | 2,062,073 | - | 4,868,648 | - |
| Hardwoods | | | | | | |
| Philippine mahogany[2/] | 137 | - | 0 | 0 | 137) | |
| Red alder | 0 | 0 | 101 | - | 101) | |
| Valley white oak | 83 | - | 0 | 0 | 83) | - |
| Calif. black oak | 15 | - | 2 | - | 17) | |
| Bigleaf maple | 0 | 0 | 12 | - | 12) | |
| Total hardwoods | 235 | - | 115 | - | 350 | - |
| Total all species | 2,806,810 | 100.0 | 2,062,188 | 100.0 | 4,868,998 | 100.0 |
| No. of active sawmills | 409 | | 392 | | 801 | |

1/ For regional boundary, see map.
2/ Produced from imported logs.

Table 2.- Lumber production by species, California and Nevada, 1951, 1950, and 1949

| Species | Lumber sawed in thousand board feet | | |
|---|---|---|---|
| | 1951 | 1950[1] | 1949[2] |
| Douglas-fir | 1,610,959 | 1,202,798 | 1,179,641 |
| Ponderosa pine | 1,247,485 | 1,240,591 | 1,190,659 |
| Redwood and bigtree | 867,150 | 875,453 | 744,120 |
| True firs[3] | 718,106 | (4) | 348,987 |
| Sugar pine | 326,900 | 326,305 | 310,843 |
| Incense cedar | 81,084 | 42,758 | 31,131 |
| Sitka spruce | 8,583 | (4) | (5) |
| Port Orford cedar | 3,239 | (4) | 1,809 |
| Lodgepole pine | 2,261 | (4) | (5) |
| Western hemlock | 1,332 | (4) | (5) |
| Western white pine | 298 | - | - |
| Western red cedar | 20 | (4) | - |
| Other softwoods | 1,231[6] | - | - |
| Hardwoods | 350 | - | 281 |
| Total, all species | 4,868,998 | 4,262,773 | 3,811,642 |
| Increase over previous year | 14.2% | 11.8% | -- |

1/ U. S. Dept. of Commerce: Facts for Industry, Lumber Production and Mill Stocks, 1950, July 17, 1952.

2/ U. S. Dept. of Commerce: Facts for Industry, Lumber Production and Mill Stocks, 1949, Aug. 16, 1951.

3/ White fir, California red fir, grand fir.

4/ Not shown because sampling error exceeds 15 percent.

5/ Not shown because sampling error exceeds 25 percent.

6/ Digger pine 631 M bd. ft., Monterey pine 600 M bd. ft.

Table 3.- Lumber production by mill-size class and species
California--Nevada Pine Region, 1951

| Mill-size class (based on 1951 production) 1/ | Active sawmills | Lumber (rough green basis) sawed from-- | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Ponderosa pine 2/ | White fir | Douglas-fir | Sugar pine | Incense cedar | California red fir 3/ | Others 4/ softwoods | Hardwoods 5/ | All species Volume | All species Percent |
| | Number | Thousand Board Feet | | | | | | | | | |
| 8 (50 MM and over) | 9 | 309,860 | 193,614 | 46,752 | 93,580 | 11,630 | 3,595 | 0 | 0 | 659,031 | 23.5 |
| 7 (25.0 MM - 49.9 MM) | 17 | 227,222 | 135,339 | 71,704 | 69,904 | 12,382 | 3,570 | 1,880 | 0 | 542,001 | 19.3 |
| 6 (15.0 MM - 24.9 MM) | 27 | 167,175 | 157,391 | 93,607 | 73,547 | 10,680 | 2,899 | 90 | 137 | 507,526 | 18.1 |
| 5 (10.0 MM - 14.9 MM) | 32 | 163,625 | 75,827 | 78,672 | 36,820 | 10,533 | 14,995 | 6,597 | 0 | 387,029 | 13.8 |
| 4 (5.0 MM - 9.9 MM) | 50 | 167,914 | 36,660 | 94,505 | 23,946 | 31,191 | 0 | 0 | 0 | 354,216 | 12.6 |
| 3 (1.0 MM - 4.9 MM) | 122 | 154,036 | 51,406 | 68,830 | 18,065 | 4,034 | 3,928 | 3,388 | 81 | 303,768 | 10.8 |
| 2 (500 M - 999 M) | 49 | 22,127 | 2,270 | 5,456 | 2,612 | 364 | 672 | 0 | 0 | 33,501 | 1.2 |
| 1 (50 M - 499 M) | 74 | 13,113 | 1,148 | 2,508 | 1,396 | 216 | 297 | 389 | 2 | 19,069 | 0.7 |
| 0 (1 M - 49 M) | 29 | 339 | 6 | 199 | 50 | 14 | 0 | 46 | 15 | 669 | (6/) |
| Total all mills | 409 7/ | 1,225,411 | 673,661 | 464,233 | 319,920 | 81,044 | 29,956 | 12,350 | 235 | 2,806,810 | 100.0 |

1/ M = thousand board feet; MM = million board feet.
2/ Includes Jeffrey pine and small amounts of other pines not separated in mill reports.
3/ May be low, as some red fir was probably reported as white fir.
4/ Includes 1,886 M bd. ft. of redwood sawed in pine region mills; also bigtree, 7274 M bd. ft.; lodgepole pine, 2,261 M bd. ft.; digger pine, 631 M bd. ft.; and western white pine, 298 M bd. ft.
5/ Includes Philippine mahogany, 137 M bd. ft.; valley white oak, 83 M bd. ft.; and California black oak, 15 M bd. ft.
6/ Less than 0.05 percent.
7/ Nevada's 5 active sawmills are distributed as follows: 2 in Class 5, and 1 each in Classes 2, 1, and 0.

Table 4.- Lumber production by mill-size class and species, California Redwood Region, 1951

| Mill-size class (based on 1951 production) 1/ | Active sawmills | Lumber (rough green basis) sawed from-- | | | | | |
|---|---|---|---|---|---|---|---|
| | | Douglas-fir | Redwood | Other 2/ softwoods | Hardwoods 3/ | All species | |
| | | | | | | Volume | Percent |
| | Number | Thousand board feet | | | | | |
| 8 (50 MM and over) | 4 | 60,275 | 195,090 | 3,848 | 0 | 259,213 | 12.6 |
| 7 (25.0 MM - 49.9 MM) | 12 | 221,262 | 200,883 | 4,866 | 0 | 427,011 | 20.7 |
| 6 (15.0 MM - 24.9 MM) | 17 | 182,328 | 137,003 | 3,729 | 0 | 323,060 | 15.7 |
| 5 (10.0 MM - 14.9 MM) | 21 | 177,964 | 65,589 | 10,929 | 0 | 254,482 | 12.3 |
| 4 (5.0 MM - 9.9 MM) | 49 | 216,375 | 112,932 | 9,394 | 0 | 338,701 | 16.4 |
| 3 (1.0 MM - 4.9 MM) | 159 | 264,006 | 132,245 | 20,603 | 26 | 416,880 | 20.2 |
| 2 (500 M - 999 M) | 36 | 15,446 | 6,620 | 2,377 | 12 | 24,455 | 1.2 |
| 1 (50 M - 499 M) | 83 | 8,940 | 7,515 | 1,611 | 75 | 18,141 | 0.9 |
| 0 (1 M - 49 M) | 11 | 130 | 113 | 0 | 2 | 245 | (4/) |
| Total all mills | 392 | 1,146,726 | 857,990 | 57,357 | 115 | 2,062,188 | 100.0 |

1/ M = thousand board feet; MM = million board feet.

2/ Includes ponderosa pine, 22,074 M bd. ft.; grand fir, 14,489 M bd. ft.; Sitka spruce, 8,583 M bd. ft.; sugar pine, 6980 M bd. ft.; Port Orford cedar, 3239 M bd. ft.; western hemlock, 1332 M bd. ft.; Monterey pine, 600 M bd. ft.; incense cedar, 40 M bd. ft.; and western red cedar, 20 M bd. ft.

3/ Includes red alder, 101 M bd. ft.; bigleaf maple, 12 M bd. ft.; California black oak, 2 M bd. ft.

4/ Less than 0.05 percent.

Table 5.- Lumber production by county and species,
California and Nevada, 1951

| Region<br>State<br>County[1] | Number of active sawmills | | Lumber (rough green basis) sawed from-- | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Reporting | Douglas-fir | Ponderosa pine | Redwood | True firs[2] | Sugar pine | Cedar [3] | Sitka spruce | Others[4] softwoods | Hardwoods [5] | All species Volume | All species Percent |
| | | | Thousand board feet | | | | | | | | | | |
| CALIFORNIA-NEVADA PINE | | | | | | | | | | | | | |
| California | | | | | | | | | | | | | |
| Amador-Sacramento[6] | 14 | 12 | 4,778 | 27,873 | | 20,011 | 10,969 | 8,620 | | | 2 | 72,253 | 1.5 |
| Butte | 24 | 18 | 36,531 | 65,624 | | 39,822 | 28,138 | 3,147 | | | | 169,282 | 3.5 |
| Calaveras | 22 | 22 | 10,625 | 53,833 | | 21,873 | 15,960 | 7,480 | | | | 109,371 | 2.2 |
| Eldorado | 35 | 35 | 20,340 | 82,493 | | 49,797 | 15,369 | 3,746 | | 1,785 | 11 | 173,541 | 3.6 |
| Fresno-Inyo-Mono[6] | 11 | 11 | | 26,506 | | 19,058 | 10,518 | 1,134 | | 15 | | 57,231 | 1.2 |
| Glenn-Colusa[6] | 3 | 3 | 1,840 | 7,338 | | 1,484 | 3,302 | 105 | | | | 14,069 | 0.3 |
| Kern | 7 | 7 | | 3,870 | | 2,692 | 524 | | | | | 7,086 | 0.1 |
| Lake-Napa[6] | 10 | 9 | 4,665 | 7,979 | 1,844 | 192 | 303 | | | | 81 | 14,660 | 0.3 |
| Lassen | 9 | 9 | 9,191 | 165,078 | | 68,619 | 10,900 | 3,368 | | | | 257,156 | 5.3 |
| Madera | 6 | 6 | | 14,989 | | 16,234 | 11,806 | 606 | | | | 43,635 | 0.9 |
| Mariposa-Merced[6] | 16 | 16 | | 7,008 | | 279 | 1,137 | 40 | | | | 8,464 | 0.2 |
| Modoc | 8 | 8 | | 81,487 | | 24,198 | | 658 | | | | 106,343 | 2.2 |
| Nevada | 28 | 27 | 17,237 | 45,491 | | 23,648 | 10,886 | 376 | | | | 97,638 | 2.0 |
| Placer | 14 | 14 | 14,521 | 27,864 | | 18,613 | 11,663 | 2,024 | | 250 | | 74,937 | 1.5 |
| Plumas | 19 | 18 | 39,987 | 99,539 | | 100,899 | 30,017 | 13,345 | | 11 | | 243,798 | 5.0 |
| San Bernardino | 9 | 9 | | 2,954 | | 240 | 10 | 2 | | | | 3,206 ) | 0.1 |
| San Diego | 3 | 3 | | 554 | | 8 | 6 | 26 | | | | 594 ) | |
| Shasta | 40 | 36 | 75,210 | 134,735 | | 44,382 | 26,929 | 19,257 | | 631 | | 301,144 | 6.2 |
| Sierra | 11 | 9 | 3,345 | 39,866 | | 17,621 | 4,602 | 1,037 | | 95 | | 66,566 | 1.4 |
| Siskiyou | 30 | 30 | 73,303 | 173,237 | | 96,569 | 27,899 | 3,164 | | | | 374,172 | 7.7 |
| Tehama | 7 | 7 | 11,706 | 27,838 | | 13,857 | 5,145 | 1,981 | | | | 60,527 | 1.2 |
| Trinity | 32 | 32 | 112,235 | 32,245 | | 5,851 | 22,178 | 376 | | | 2 | 172,887 | 3.6 |
| Tulare | 16 | 16 | | 18,851 | 7,304[7] | 29,501 | 15,913 | 2,618 | | 3 | 139 | 74,329 | 1.5 |
| Tuolumne | 15 | 15 | 2,147 | 65,768 | | 54,882 | 41,046 | 4,357 | | | | 168,200 | 3.5 |
| Yuba | 15 | 12 | 26,501 | 41,135 | 12 | 24,349 | 14,572 | 3,262 | | | | 109,831 | 2.2 |
| Total California Pine Counties | 404 | 384 | 464,162 | 1,213,751 | 9,160 | 690,679 | 319,414 | 80,729 | | 2,790 | 235 | 2,780,920 | 57.2 |
| Nevada | | | | | | | | | | | | | |
| Clark-Douglas-Washoe-White Pine[6] | 5 | 5 | 71 | 11,660 | 0 | 12,938 | 506 | 315 | | 400 | 0 | 25,890 | 0.5 |
| Total Pine Region | 409 | 389 | 464,233 | 1,225,411 | 9,160 | 703,617 | 319,920 | 81,044 | 0 | 3,190 | 235 | 2,806,810 | 57.7 |

Table 5 (continued)

| Region / State / County | Number of active sawmills: Total | Number of active sawmills: Reporting | Lumber (rough green basis) sawed from--: Douglas-fir | Ponderosa pine | Redwood | True firs | Sugar pine | Cedar | Sitka spruce | Other softwoods | Hardwoods | All species: Volume | All species: Percent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Thousand board feet | | | | | | | | | | |
| CALIFORNIA REDWOOD | | | | | | | | | | | | | |
| California | | | | | | | | | | | | | |
| Del Norte | 33 | 28 | 49,909 | | 82,263 | 257 | 270 | 25 | 7,573 | 1,275 | | 141,572 | 2.9 |
| Humboldt | 174 | 155 | 810,011 | 119 | 394,126 | 11,828 | 3,048 | 3,234 | 1,010 | 57 | 14 | 1,223,447 | 25.1 |
| Mendocino | 126 | 117 | 237,245 | 21,955 | 321,473 | 2,338 | 2,444 | 40 | | | 101 | 585,596 | 12.0 |
| Monterey | 4 | 4 | 513 | | 981 | | | | | 600 | | 2,094 ) | 0.2 |
| San Mateo | 7 | 7 | 1,318 | | 5,569 | | | | | | | 6,887 ) | |
| Santa Cruz-Santa Clara 6/ | 8 | 8 | 2,707 | | 11,513 | | | | | | | 14,220 | 0.3 |
| Sonoma-Marin 6/ | 40 | 38 | 45,023 | | 42,065 | 66 | 1,218 | | | | | 88,372 | 1.8 |
| Total Redwood Region | 392 | 357 | 1,146,726 | 22,074 | 857,990 | 14,489 | 6,980 | 3,299 | 8,583 | 1,932 | 115 | 2,062,188 | 42.3 |
| Total CALIFORNIA | 796 | 741 | 1,610,888 | 1,235,825 | 867,150 | 705,168 | 326,394 | 84,028 | 8,583 | 4,722 | 350 | 4,843,108 | 99.5 |
| Grand Total - CALIFORNIA-NEVADA | 801 | 746 | 1,610,959 | 1,247,485 | 867,150 | 718,106 | 326,900 | 84,343 | 8,583 | 5,122 | 350 | 4,868,998 | 100.0 |

1/ Counties in which no lumber was cut are not listed.
2/ White fir and California red fir in Pine Region; grand fir in the Redwood Region.
3/ Incense cedar in the Pine region; primarily Port Orford cedar in the Redwood Region.
4/ In the Pine Region: lodgepole pine, digger pine, western white pine; in the Redwood Region: western hemlock, and Monterey pine.
5/ For species included, see footnotes of Tables 3 and 4.
6/ Combined to prevent disclosure of individual operations. The following counties contained only 1 active sawmill in 1951: Colusa, Inyo, Marin, Mono, Merced, Napa, Sacramento, and Santa Clara in California; and Clark, Douglas, and White Pine in Nevada.
7/ The Tulare County figure of 7,304 includes: 7,274 M bd. ft. of bigtree and 30 M bd. ft. of redwood (the logs for the latter originating in the Redwood Region).

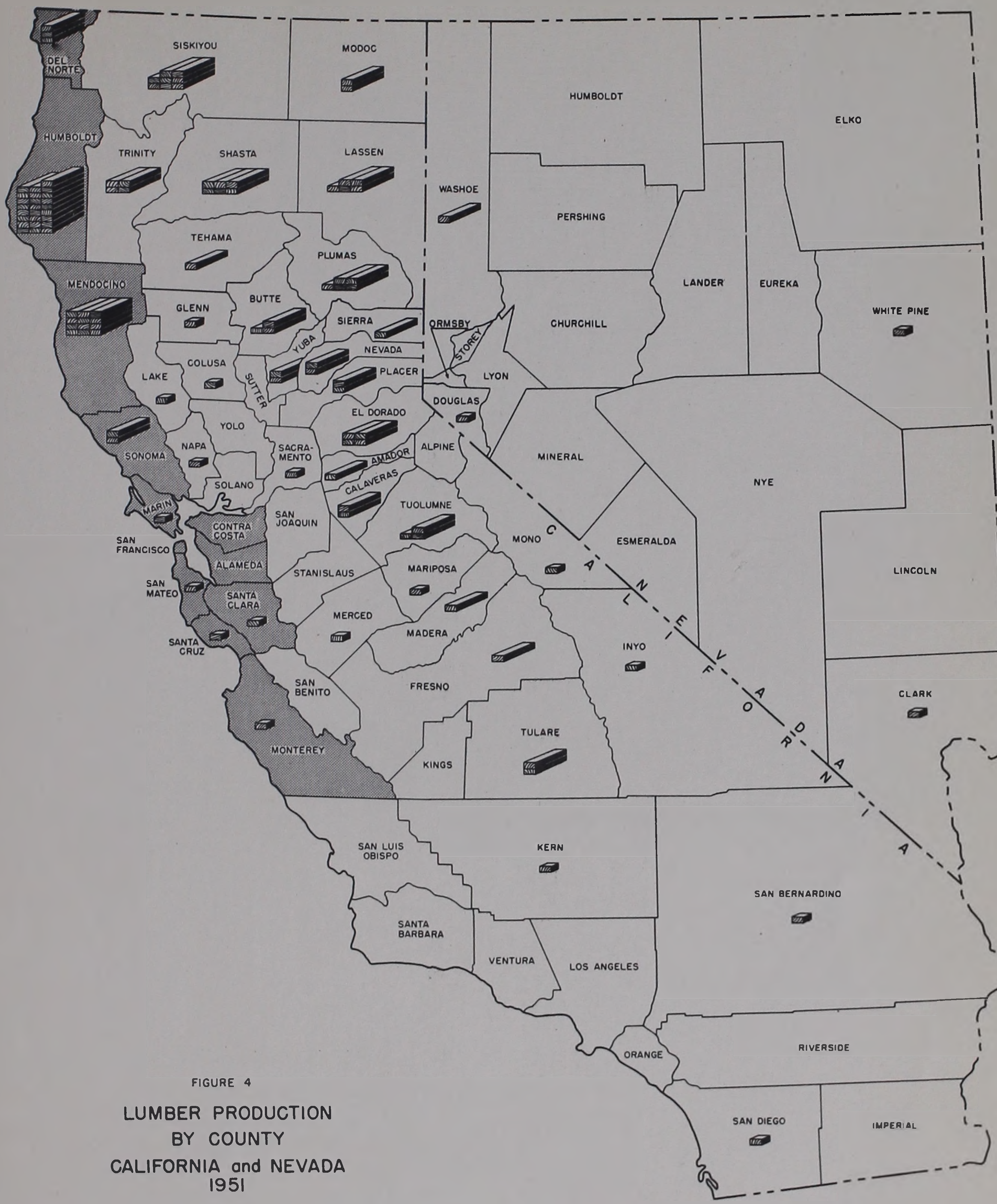


FIGURE 4

# LUMBER PRODUCTION BY COUNTY CALIFORNIA and NEVADA 1951

LEGEND

Represents 1% of total production

Represents less than 0.5%

California Redwood Region

California-Nevada Pine Region